Sacred Geometry , music and a possible correlation with quantum-mechanics

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Based on my July 1997 essay at Tripod

Directory of contents

Part One:
Introduction
The basic idea of Sacred Geometry
Introduction to the formula
The formula and quantum-mechanics
Planetary motions and the music of the spheres
The ancient Greeks and their love of proportions
Bibliography and online material

Part Two: Pythagorean triangles and musical proportions

Appendix: seven key axioms for a truly integrated science

Introduction

In this article I will introduce a simple geometrical formula which has interesting properties in relation to ideas found in Sacred Geometry, music theory, and possibly quantum mechanics.
I will not provide an extensive introduction to the concept of Sacred Geometry here, since there are many websites where you can find introductory material into this field.
Instead of that, I will, provide some links to material in print and to some lesser known websites.
The appendix stands on its own. It contains seven magnificent axioms that will transform science as we know it in some future, hopefully not too distant, time.

The basic idea of Sacred Geometry

The basic idea of Sacred Geometry is summed up by Plato:

'The Demiurgos geometrizes'.

Now, the Demiurgos, often erroneously translated as "God", is simply the collective host of beings that is sometimes referred to in the wisdom-tradition as 'the Architects' or the third (manifest) logos of our cosmos.

(For a reference to the wisdom-tradition literature, see the bibliography at the end of this article, especially the appendix)

In the Biblical Genesis we find the term 'Elohim', which again is erroneously translated as "God". Instead, it can be better translated as 'host of angelic beings', which formed mankind in their image.
These beings are all related in the process of formation of a cosmos and its inhabitants that constitute such a cosmos.

This, of course, is a story in itself and more details can be found in Ralston Skinner's work 'Source of Measures', Godfried de Purucker's 'Fundamentals of the esoteric philosophy' and other writings of his, in Alvin Boyd Kuhn's and Gerald Massey's writings as well as in Helena Petrovna Blavatsky's writings such as 'Isis Unveiled' and 'The Secret Doctrine' (the last book being rather mystical in nature and generally being very little understood).

Now, the question is, *How* does the demiurgos geometrize?
What or which are the ways and methods which are used in or through the Minds of the intelligences that have prepared the design or sketch for our earth, man, flowers, animals, minerals, etc.?
This question has occupied many minds , from the old Hindus to the Babylonians, Greeks, Jews, to the modern student of Sacred Geometry. Some (partial) answers seem to have been found and laid down in architectural designs to be found for example in Hindu temples and Egyptian pyramids, and coded into scriptures such as the Bible, the Hindu Puranas, etc.

The above mentioned work of Ralston Skinner provides some clues.
For the keen observer it is very clear that there is an **inherent order** in this universe, although there may appear to be chaotic phases due to the interactions of a multitude of factors, wills, energies, etc.
The growth and development of a human embryo is a good example of the harmonious workings of nature. In the beginning stage, the cells are configured in a beautiful geometrical pattern, reminding one of the structures that are found in the mineral kingdom. Later on in the developmental stages one can observe structures reminding one of plants, lower animals, etc., culminating in the fully developed foetus.
Michael Schneider has written a beautiful book on Sacred Geometry which illustrates features such as the above. He wrote "A Beginner"s Guide To Constructing The Universe" (HarperPerennial). Some websites relating to the book & Michael Schneider:

Cosmic Dozens: Twelve-Fold Designs of Society and Art

His 1996 Workshop:

Sacred Harmony: The Patterns of Nature and the Ways of Knowing

Book Reviews:

A Beginner's Guide to Constructing the Universe: The Mathematical Archetypes of Nature, Art, and Science (A Voyage From1 To 10)

Book review by David Fideler, reprinted from PARABOLA (Winter 1995)

Michael's workshops in northern CA

Another classic on Sacred Geometry is Doczi's book **'The power of limits'** which richly illustrates the harmonies in nature, art and architecture.
Manifestation means limitation and thus the title of the book was enough incentive for me to buy it and have a look at it. Doczi develops the idea of **dinergy** and patterns of sharing. Dinergy refers to the working of opposites united in a harmonious proportion. An example is the working of the minor and major parts of the golden proportion. He invented the word 'dinergy' to refer to the *universal pattern-creating process.* This reconciliation of opposites is a very familiar idea in the work of Carl Gustav Jung, which he borrowed from writings on alchemy. It also is being popularized by Iain McGilchrist in his tome on "The matter with things", in which he shares his insights and research into the different functions of the left and right hemispheres in the human brain. On Youtube one can find many interviews with McGilchrist which clarify the complementarity of the two hemispheres in the brain.

As a preliminary remark to what follows, I want to add that I don't believe that one magical mathematical formula exists which explains all and everything. The Boundless has an infinite number of attributes and its emanations vary accordingly. Yet we are told that analogy seems to be the guiding principle in the emanation and building of worlds, forms, etc.
Infinite variation along analogical lines (nature repeats itself in endless variations) may be the answer to the question of the operations in/of the Divine Mind and more specifically visible in the works of the Builders , but more research is necessary. The emergence of fractal theory seems to be an interesting development in this respect. Fractals embody the principle of repetition so abundantly present in nature. Related to this is the notion of **holons,** part-wholes, which are fractal-like in some respects. In the appendix, I have summarized seven key principles distilled from the wisdom-tradition literature that relate to these matters.

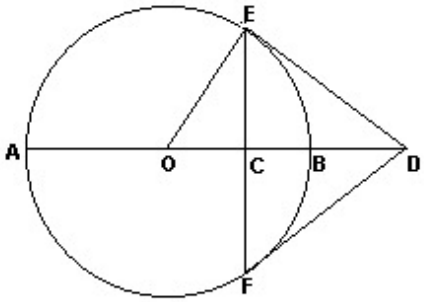
The theosopher Gordon Plummer has shown that the dodecahedron is capable of generating the icosahedron, and these two Platonic solids together, the other Platonic solids (tetrahedron, cube, octahedron) through the working of the well-known number Phi (the golden section number).
The dodecahedron and icosahedron can generate each other in an infinite series through a repeated geometrical process where the Phi proportion plays a dominant role.
His "Mathematics of the Cosmic Mind' is interesting food for thought. Some independent researchers have followed up on his ideas and also try to combine ideas from Sacred Geometry with chaos theory and fractals.

An example of Sacred Geometry , applied to the Platonic solids and the Kabbalistic Tree of Life , can be found at: http://hierogeometry.com/

Introduction to the formula

Now I come to my own , thus far limited, research in the area of Sacred Geometry. While studying the Secret Doctrine of Blavatsky, I discovered her mentioning something about seven being the root number of formation. Being engaged in a little study of Greek geometrical concepts, like arithmetic mean, geometrical mean and harmonic mean, I decided to do a little research on the root of seven (the number) and this proved to be the start of some interesting discoveries.

Figure 1 shows the relation of these means to each other:



OC.OD = OE.OE = OB.OB

OD : DE :: DE : DC

OD = 1/2 (DA + DB) is arithmetic mean between DA and DB

DE is the geometric mean and DC is the harmonic mean between DA and DB

Fig. 1. The arithmetic mean is to the geometric mean as the geometric mean is to the harmonic mean (from the theory of harmonic section)

I will sketch some highlights of these findings, which form only the proverbial tip of the iceberg.
The next section presupposes a basic interest in, and acquaintance with, high school mathematics. The formulas for the three means are obtained as follows:

The poles $a + b\sqrt{c}$ and $a - b\sqrt{c}$, presented as $a +- b\sqrt{c}$ here, give the three well-known means:

Geometric mean squared: $G^2 = a^2 - b^2.c$ where . is the multiplication sign,

Arithmetic mean: $A = a$,

Harmonic mean $H = G^2/A = (a^2 - b^2.c)/A$

For the form $N^2 +- N\sqrt{(2N-1)}$, the means are as follows:

$A = N^2$; $G = N.(N-1)$; $H = (N-1)^2$

First of all, I started with the idea that Pythagoras' famous musical proportions might be found by using the idea of arithmetical, geometrical and harmonic means generated from a pair of numbers (two **poles**) , thus:

$A - n.\sqrt{(7)}$ and $A + n.\sqrt{(7)}$, where A is the arithmetical mean of this pair and **V** is the symbol for taking the **square root** (in this case of the number seven) and the '.' is a symbol for multiplication, as is the * sign which is also used further on.

I found out that the following two poles had a relation to the fourth (which is a proportion of 4:3) :

16 - 4.√(7) and 16 + 4.√(7)

This pair of numbers yields the following means:

A = 16 ; G = 4 * 3 = 12 and H = 9, according to the formulas for A,G, and H.

G means the geometrical mean for the two poles and H indicates the harmonic mean.

The formulas for G and H are in this case:

$G = \sqrt{(16^2 - 16 * 7)}$ and $H = G^2 / A$

Now, 16:12 is 4:3 and 12:9 is 4:3 , so the 4:3 proportion is implied.

This result encouraged me to research further pairs of numbers and I found some interesting poles with properties as follows:

9 - 3. √(5) and 9 + 3.√(5) have A= 9, G= 6 and H= 4 which imply

a relation of 9:6 = 3:2 and 6:4 which again is 3:2. This is the proportion for the quint or fifth in music!

I'll spare you some details of research and present the abstracted general formula, capable of generating musical proportions:

The poles $N^2 - N * \sqrt{(2N-1)}$ and $N^2 + N * \sqrt{(2N-1)}$ generate the following means:

$A = N^2$, $G^2 = N^2 * (N -1)^2$, $H = (N-1)^2$
$G = N * (N -1)$

Note the beautiful interplay of terms here: substitute N + 1 for N and H becomes N which is the value of A for N proper.

For N=2 we get : A = 4, G = 2, H= 1 which implies 4:2 = 2:1
In other words, the idea of an octave!

N =3 yields the proportion of the fifth as I've shown already, N = 4 yields the proportion of the fourth in music. N = 5 yields the 5:4 proportion which Pythagoras seemed to dislike, but was incorporated in the musical scheme of another Greek School of philosophy as being a natural proportion.

However the case may be, the famous 9:8 proportion (the distance between two notes on the major scale) is generated when N=9.

So far for music. As an aside: the root-scheme includes all the roots of uneven numbers including the famous ones in Sacred Geometry. The only root missing is that of 2 which is symbolical for a square. I suspect that there is another principle to be synthesized into my little theory - some formula containing this root-number and maybe some squaring function. Systems interacting, so to speak. (a small part of this has been solved by me now, see part two of this document, which has been published in Nexus journal – see bibliography).

The formula and quantummechanics

I did some more research on this generative set of poles and discovered some other properties. While researching the presence of cyclicity in the generated means by use of this type of scheme (I call it the 'root-number scheme '), I discovered that it seemed to have a relation to the famous periodic shell-number in quantum-mechanics: $2 * N^2$

The first electronic shell for N =1 has 2 'positions' for electrons (1S- shell). The second electronic shell for N=2 has 8 'positions' for electrons (2S-shell allows two orientations of spin) and 1P shell (allows 3*2 or six orientations), and so on.

What I discovered was that by varying on the above mentioned scheme by introducing a factor m, a new feature arose:

$N^2 - m.N * \sqrt{(2N-1)}$ and $N^2 + m. N * \sqrt{(2N-1)}$
where m is an integral number .

Now, G and H depend on m besides N as to their value. I discovered that by setting m = N (which is the **maximum** value of m that is possible without making G negative) and substituting $2.N^2$ for N yields integral values of G and H :

$(2*N^2)^2 +- N.2.N^2 * \sqrt{(4N^2-1)}$

This gives values of A, G and H:

$A= (2N^2)^2$; $G = (2N^2)*N$; $H = N^2$

which again shows an interesting relation between A and H: H has now the same numerical value as A had in the previous scheme. Somehow there seems to be an interplay between the schemes in such a way that the arithmetic mean and the harmonious mean take each other's value.

This makes sense to me, however, as I think that everything in nature is connected to each other and the above mentioned interplay would fit perfectly into nature's wondrous works. By the way, if you care to research the values for A, G and H in this case you will find musical harmonies again!

I have not as yet deeply investigated the relation between the above scheme and quantum-mechanics (QM) except for noting the interesting results for H being equal to N^2 for certain values of N , namely where $A=(2N^2)^2$, and discovering the limited allowed values for m: m >= -N and m <= N which reminds me somewhat of the number of allowed values for the projection of orbital angular momentum of a particle, say an electron, on the z-axis of a Cartesian coordinate-system (although we need a third variable to establish this connection - the angular momentum quantum number l). This is speculative, of course, but not as weird as it may seem to be. Motion might be described by a new kind of formalism which connects natural phenomena in a clearer way than has been established up to now, that is, underlying forces and patterns may be supposed to exist in order to describe the connections between the rich variety of phenomena that we observe (and who says that we are aware of *all* these phenomena?). As a side note, quantum field theory is an attempt to describe such connections, but fails to take gravity into account.

Now, N^2 is a term which appears in the equation for the energy states of a hydrogen atom:
E_N = constant/ N^2
Spectral emission occurs when an electron falls from a higher energetic level to a lower one. The frequency of the spectral line (for hydrogen) is simply given by:

frequency = C $((1/ N)^2 - (1/ M)^2)$ where N and M

are integral numbers > 0 and M > N.

Actually, I suspect that relations, such as I discovered, may be connected to orbital motion, be it of electrons or of planets and possibly with rotations around the own axis of these bodies (which are called 'spin' in the case of subatomic particles such as electrons).

Planetary motions and the music of the spheres

I need to mention another relation between G^2 and A, based on the foregoing values

$A= (2N^2)^2$; $G = (2N^2)*N$; $H = N^2$:

$(G^2)^2 / A^3 = ¼$ which is interesting, since it reminds me of the famous law of Keppler: the quotient of squared time of revolution and long semi-axis of orbit of the planets around the sun to the third power is constant. He derived the elliptic motion of the planets from this empirical fact and some other ones. Don't bother about the number ¼: the original form of the root-scheme can be multiplied by a constant without any essential change as to the results. Admittedly speculative, but a whole field of research opens to the open-minded researcher. After all, titanic intellects such as those of Pythagoras spoke of the **music of the spheres** and this is just what the root-scheme formulas seem to be about: harmonic proportions in nature.

The same proportion for G and A can be derived for subsystems of the root-scheme. I leave this as an exercise to the mathematically inclined readers.

Schemes as the above are known (in a general sense) in the algebraic theory of groups. I've not yet researched all the mathematical properties (as to group properties, subgroups, cyclicity, existence of unity element, etc.) of this type of system. The system will probably have to be extended with other factors, elements of interaction, etc.

To the student of Sacred Geometry: there seems to be a beautiful element of squaring involved here. Finding a root is related to squaring, since the squaring of a root yields the original number from which the root has been extracted. Squaring and taking the square root of numbers are inverse functions, which very much seem to have a place in sacred-geometry. The play of nature (according to the pattern in the mind of the Demiurgos), I suppose.
This squaring and finding a root must be brought into relation with circles and spheres, or circular/ spherical motion to make it produce natural phenomena such as harmonic motion, spirals, etc. This should be the subject of deep investigation, I think, the more so since scientists have got stuck in their paradigms and may need to get an impulse from alternative researchers to establish new paradigms pertaining to nature.

The ancient Greeks and their love of proportions

I almost forgot to mention that the ancient Greeks seemed to attach much value to surface and perimeter of geometrical figures. I have related these two with the harmonic mean as follows (for square and rectangle):

Let a be the side of a square, b and c the sides of a rectangle.

Demand the invariance of proportion between surfaces and surfaces and perimeter to perimeter of square and rectangle.

Then it follows that: $4a / (2b + 2c) = a^2/ (bc)$
Elaborating this gives: $2bc/(b+c) = a$ which is equivalent to:

$a = bc/((b+c)/2)$ which **is** the formula for the geometrical mean for the poles:

$½(b+c) +/- ½(b-c)$

So, $½(b+c)$ is the arithmetical mean here, being the ¼ part of the perimeter of a rectangle, so to speak an average of the four sides.

$H = a = 2bc/(b+c)$ which is the side of a square
and $G^2 = bc$ which is the surface of a rectangle, which means that $G = \sqrt{(bc)}$ which starts one thinking about the relation of square to rectangle again.
Could it be that nature prefers certain numbers a, b and c so that integral numbers and proportions of integral numbers are preferred in its work? Certainly I see no way in which a transcendent number by itself could appear in manifested form, the perfect circle being a mathematical **idea** and not a physical fact. **What else** could be meant by "squaring the circle" than the **operation of a principle of limitation** in nature?
Remember that pi is a transcendent number which means that it cannot be written as a proportion of two integral numbers. Nature (the divine mind to others) must have found a way to manifest itself (by limitation), thus using approximations of the famous numbers pi and phi (and other numbers). Ralston Skinner has decoded a system for the use of approximations of pi in his “Source of Measures” and he may well be on the right path of research.

Madam Blavatsky has confirmed some of his central assertions and she also noted that: 'the whole of the work of Euclides was meant to demonstrate the properties of the dodecahedron' (a quote from memory). A quote which is certainly memorable when viewed in the light of some discoveries in Sacred Geometry (see Gordon Plummer's book referred to previously).

So, I suspect that the principle of quantization is inherent in nature, even more so than scientists have already discovered in the realm of quantum-mechanics. Much research has still to be done in this regard and I would invite others to engage in this type of research!

An interesting link in this regard is:
Cycles in the universe

To end this part of the article, I want to express my hope that geometry will one day again play a dominant role such as it once had in mathematics. Clerk Maxwell (from the famous Maxwell equations in electromagnetism) used Thomson's geometrical proofs of his equations, but nowadays this geometrical knowledge and these skills seem to be lost to the scientific community to a large degree. Add to this an integration of Phenomenology (as Goethe very much wanted) and Sacred Geometry with science, and, a new science, more true to nature, may be born!

Martin Euser
https://archive.org/details/@gnostic_researcher

Part Two: Pythagorean triangles and musical proportions

Abstract

Since I wrote my previous article on Sacred Geometry I did a little research on the factor √(2N - 1) , square root of (2N -1), and found some interesting relations between musical proportions and Pythagorean triangles. Furthermore, I looked into the matter of the 'root-factor'- scheme a bit further and found that the simple scheme N +/- √(N) is also interesting as a generative set of pairs of numbers. This set looks like a prototype for the generative set of pairs of numbers I discussed in my previous article (part one of this pdf). I will present these findings summarily and leave it to the reader to elaborate upon them.
The thing that got me started this time was a reference to Adrastus by Theon of Smyrna (in his book "Mathematics useful for understanding Plato" , publ. Wizards, San Diego). Adrastus is said to have said that out of all the different mathematical means the geometrical mean is the most important. Why this is so, is not made clear.
However it may be, I focussed on the factor √(2N-1) and thought it would be interesting to consider this factor as a geometrical mean. Hence I sought two terms that would yield this factor. Proceed as follows:

a : √(2N-1) = √(2N-1): b

hence: a.b = 2N – 1 (the dot is the symbol for multiplication here)

I dissolved 2N-1 into two component factors: √(2N) + 1 and √(2N) -1 which can be taken to be a respectively b.
Some interesting features arise from these factors: a-b = 2 for all N and √(2N) yields integral values for $N = 2c^2$, namely: 2c

When you elaborate these values for 2c you will find 2,4,6,8,10, etc. which is a series that shows musical proportions (4:2 is octave, 6:4 is quint, etc.)

The number two is prevalent here. The terms a and b form interesting series when $N=2c^2$, namely:

for a: 3,5,7,9, ..
for c: 1,3,5,7,..

which are of the form 2N+1 or 2N -1 (N >= 1)
One hypothesis could be that these values are the input in the term √(2N-1) in the root-scheme formula. This would link Pythagorean triangles with this formula (see below why this could be so).
Since proportions are the thing we're after in Sacred Geometry, I had a look at the proportions of √(p/q) where $p = 2d^2$ and $q = 2e^2$.
This formula gives rise to musical proportions:

for d = 2 and e = 1 it yields: 2/1 = 2 , the octave
for d = 3 and e = 2 it yields: 3/2 , the third or quint
for d = 4 and e = 3 it yields: 4/3, the fourth
etc.
The formula $2N^2$ is thus seen to be connected with musical proportions.
Now, for some intuitive reason, I started to combine the variables d and e in the following fashion:

sum of squares of d and e: $d^2 + e^2 = r$
subtract squares of d and e: $d^2 - e^2 = p$
double product of d and e: $2.d.e = q$

For d=2 and e=1 this procedure renders: $r = d^2 + e^2 = 5$, $p = d^2 - e^2 = 3$, $q = 2.d.e = 4$, which reminded me of the famous Pythagorean triangle with sides 3, 4 and 5.
This triangle is common in the physical shapes/forms of many fishes, as Doczi shows in his book on the power of limits.

For d=3 and e=2 we get: $2.d.e = 12$, $d^2 + e^2 = 13$, $d^2 - e^2 = 5$ and, yes, this is another famous Pythagorean triangle with sides 5, 12, 13.
And so on for higher values for d and e.

So, a correlation is established between Pythagorean triangles and musical proportions, as I have proven here mathematically. These triangles seem to be connected to the root-number scheme too. I would not be surprised when they would play a vital role in the structure-function-order of nature (e.g. in atomic shell structure). After all Pythagoras was a very wise man, who taught the mysteries in his Mystery-school and it is very likely that he knew a lot of the workings of nature, being initiated in the Mysteries himself.
Very simple properties for the Pythagorean triangles can be derived from what I have deduced already (see also figure 1):

$r - q = d^2 + e^2 - 2.d.e = (d - e)^2 = 1$ because e is taken to be d + 1

$r - p = d^2 + e^2 - (e^2 - d^2) = 2.d^2$, which is the famous formula for periodicity of electronic shell-structure.

Interesting enough, $r + p = 2.e^2$, which refers to the same formula, but to the next shell-number (e = d + 1).
This means that the following relations between p, q, r and d, e hold:

$p = d + e = 2.e - 1$; $q = 2.d.e = 2.(e^2-e)$;
$r = q + 1 = 2.d.e + 1 = 2.(e^2 - e) + 1$

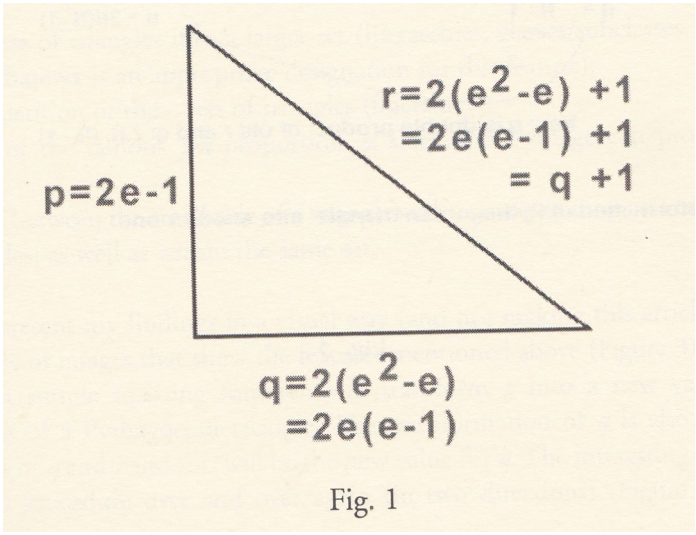


Fig. 1: Abstract Pythagorean triangle

Thus, the Pythagorean triangles can be characterized by one variable, e, which starts with value e = 2 to render the 3,4,5 triangle and so on, proceeding in incremental fashion e=3, e=4, etc.
Replace e by N , and one gets p = 2.N -1 , the term appearing in the root $\sqrt{(2N-1)}$.
Now, q = 2N(N-1), which equals the double of the geometric mean of the pair
$N^2 + N.\sqrt{(2N-1)}$ and $N^2 - N.\sqrt{(2N-1)}$.
See the first part of this article for a discussion of this pair.
This is an interesting result, the ramifications of which are not yet clear.
There may be a relation to a very simple generative set of number-pairs:
$N + \sqrt{(N)}$ and $N - \sqrt{(N)}$

These pairs have the following means:

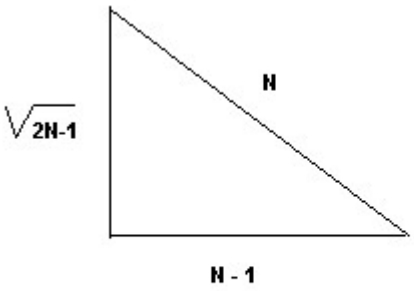
A= N ; G = $\sqrt{(N*(N-1))}$; H = N -1

which means are connected to the previously mentioned pairs:

N^2 +/- $N.\sqrt{(2N-1)}$ because in that case A = N^2 ; H = $(N-1)^2$ and G= N(N-1) which are simply the squares of the values of the means of the pairs N +/- $\sqrt{(N)}$.

One hypothesis is that A = N and H = N-1 feature as the terms d and e in the formulas above which connects them to p, q and r in the Pythagorean triangles.
Note that A + H = 2N-1. Furthermore, A/H gives a musical proportion, at least for N= 2,3,4 and N=9 in the Pythagorean musical scheme.
After considering the terms A=N and H=N-1, I noted that the difference between them is one unit, exactly as is the case with the variables r and q in the Pythagorean triangle. So, I

figured that it would be interesting to identify A and H as the sides of this triangle and calculated the side p to be equal to √(2N-1). See figure two:



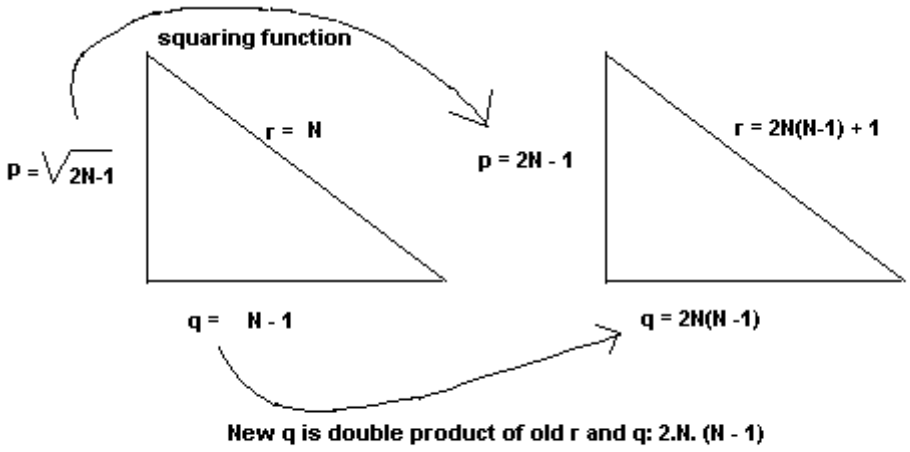
Another way of representing Pythagorean triangles

Figure 2

So, this is another way of viewing the Pythagorean triangles, and it may be interesting to connect the former description with this one. Mathematically, this points to some transformation of variables, mapping one description onto the other.
Indeed, I had a look at these two ways of describing Pythagorean triangles and discovered some new facets:

- embeddedness of triangles into a larger set (hierarchies, classes/subclasses, sets and subsets or whatever is an appropriate designation for this feature)
- a kind of repetition of these sets of triangles (fractality?)
- appearance of the famous phi proportion as sides of a Pythagorean prototypical triangle
- connections between the small side of a triangle and a corresponding one in the next set of triangles, as well as within the same set.

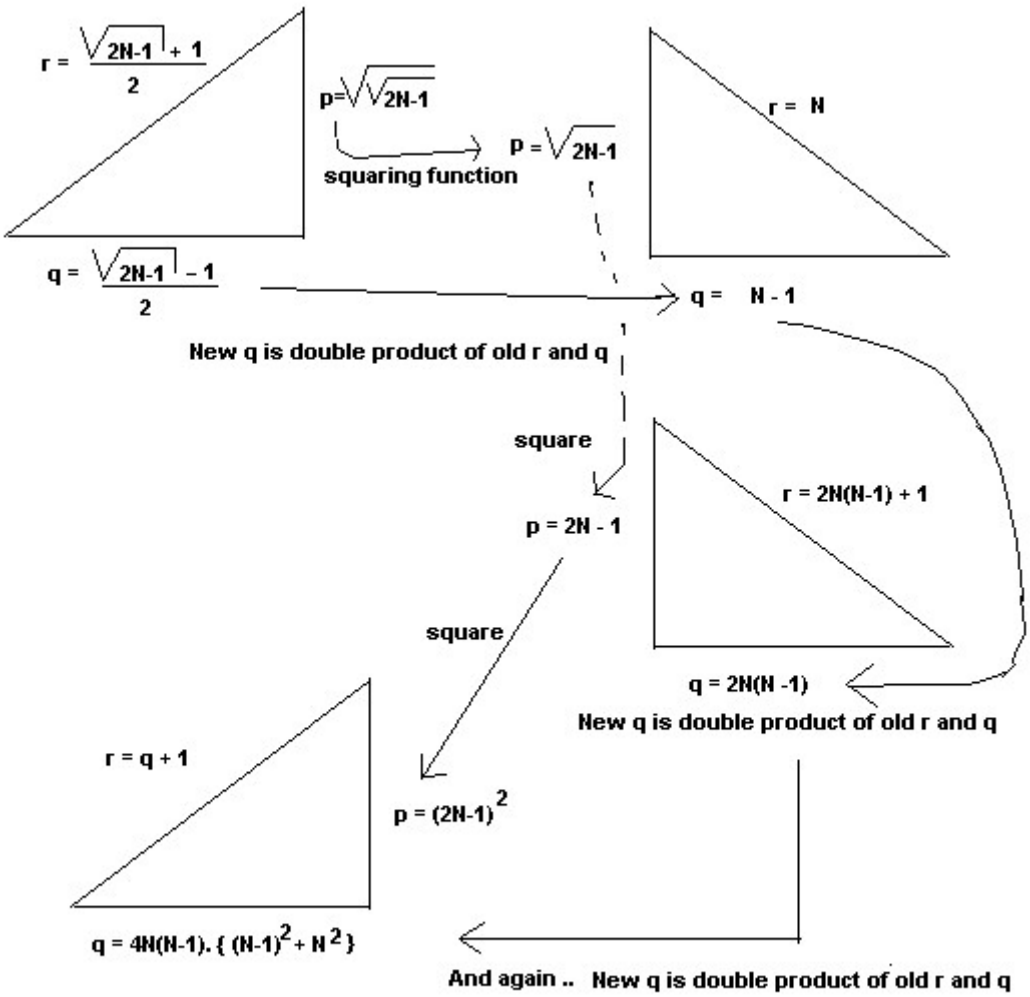
In order to present my findings in a visual way (and not making this article too boring :)), I'll include a couple of images that show the features mentioned above: (figs. 3-5)



Transformation of Pythagorean triangle into another one

Fig. 3

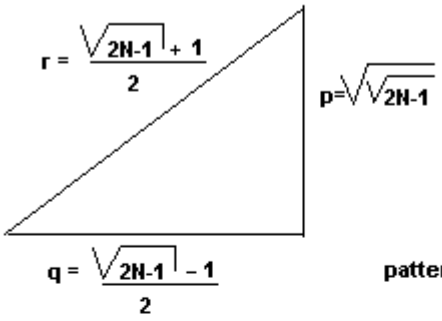
Comment: a simple squaring function will transform p into a new value for the short rectangular side of a Pythagorean triangle. The transformation of q is also simple: form the double product of q and r and this will be the new value for q. The interesting feature is that you can repeat this procedure over and over again (in two directions)- see figure 4:



"Evolution" of Pythagorean triangles: the same procedure repeated again and again

Figure 4

To make this abstract picture a bit more understandable we must fill in some values for N and have a look at the following tables (fig.5):

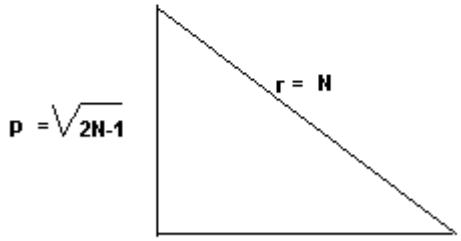


N	p	q	r
2	$\sqrt{\sqrt{3}}$	$\frac{\sqrt{3}-1}{2}$	$\frac{\sqrt{3}+1}{2}$
3	$\sqrt{\sqrt{5}}$	$\Phi - 1$	Φ
4	$\sqrt{\sqrt{7}}$	$\frac{\sqrt{7}-1}{2}$	$\frac{\sqrt{7}+1}{2}$
5	$\sqrt{3}$	1	2

Golden proportion!

pattern: $2^2 + 1^2 = 5$

For N = 5 one gets p, q and r by the procedure as outlined in the previous figure. In addition: $q^2 + r^2$ = new r for N=5



N equals r

N	p	q	r
2	$\sqrt{3}$	1	2
3	$\sqrt{5}$	2	3
4	$\sqrt{7}$	3	4
5	3	4	5
....	...	...	...
13	5	12	13
....	...	....	...
25	7	24	25

$5 = 2^2 + 1^2$

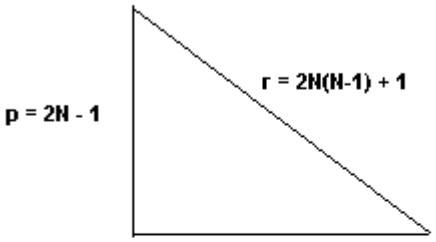
$13 = 3^2 + 2^2$

$25 = 4^2 + 3^2$

2 x

Observe the repetition of a pattern: the triangle corresponding to N =2 is 'reproduced' as indicated before and the corresponding N=5 can be found by summing the squares of 2 and 1. Ditto for N=3 , N=4, etc. with appropriate squares of N and N-1 The same applies to r. Note also sum of squares of q and r and double product of q and r.

$25 = 4^2 + 3^2$

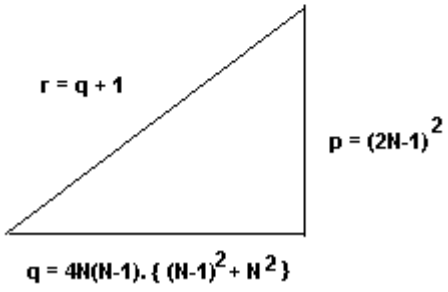


N	p	q	r
2	3	4	5
3	5	12	13
4	7	24	25
5	9	40	41
6	11	60	61

etc.

Same patterns as above sets of triangles Pay also attention to the corresponding triangles across tables!

$5 = 2^2 + 1^2$



N	p	q	r
2	9	40	41
3	25	312	313

etc.

Above: Figure 5 with table for N, p, q, r

In the tables I've indicated the connection between triangles within and across tables by the transformation $N \rightarrow N^2 + (N-1)^2$. This transformation is correlated with the other transformations $p \rightarrow p^2$ and $q \rightarrow 2.q.r$.

Note also that the famous Phi proportion makes its appearance in one of the tables I've shown you in the above figure. This may be indicative of the richness of the system I'm trying to research. This system (the various representations of Pythagorean triangles, the transformations, correlations, etc.) reminds me a bit of the theosophical teachings about the development, evolution or emanation of the Elements (earth, water, air, fire, aether) out of one another in serial progression. It exhibits a clear structure of classes with subclasses - hierarchical, so to speak, possibly being groups and subgroups in a mathematical sense - another feature to research. It is possible to generate more of these triangles as indicated in the figures above, showing a kind of fractal nature of the entire system, perhaps.
One thing is certain: there remains a lot to discover regarding the field of Sacred Geometry as it pertains to nature.

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My archive

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on contemporary spirituality, varying from Gnosis, Theosophy and Kabbalah to Sacred Geometry as well as being an editor of electronic editions of ancient manuscripts among which those of Jacob Boehme and Proclus.

Appendix: seven key axioms for a truly integrated science

a summary from the wisdom tradition

by Martin Euser

https://archive.org/details/@gnostic_researcher

Introduction

The wisdom tradition (in short, the collective wisdom of the human race, passed on throughout the ages by sages and mystics) outlines seven key principles that are operative throughout nature. Together, these principles provide a framework to understand more of ourselves and the cosmos. On my Youtube channel, I have provided seven presentations (text only), which one can find collated here in pointwise formulation. Many of these principles have gained some recognition of the best of our scholars.
Some basic intuitive awareness of natural processes will help one to recognize the wisdom and experience embedded in these formulations of the principles or axioms, if one prefers.

One book that may help one to get some grasp of the following material is: The Matter with Things, by Iain McGilchrist. On Youtube one can find a discussion/ dialogue with Iain about his book. A previous book of his is The Master and His Emissary, which focuses on the divided brain and the making of the Western world.

The principles, or axioms

A short list of the principles:

1. Cycles are ubiquitous in nature
2. Actions have consequences. Role of feedback
3. Nature is made up of holons, part-wholes
4. Everything has a unique pattern of vibration
5. Progressive evolution
6. Duality is the hallmark of manifestation
7. Unity in diversity

The first principle or axiom: cycles

Many, or all, processes in nature have a cyclic component.
Examples:

- Revolutions of planets and consequent seasons of the year
- Biorhythms, breathing, etc.
- Civilizations: they come and go

- Paradigms in science (Kuhn, the structure of scientific revolutions)
- Thoughts (further info in my books)
- Hormonal cycles, sleep-wake cycles
- The oxygen-carbon dioxide cycle: animals breath in oxygen, and exhale carbon dioxide; plants do the opposite. Without this cycle, humans would not exist. This complementarity of processes also involves the sixth axiom, it seems.

Before discussing the life-death cycle, we must discuss viewpoints on life.

Two opposed life-views:

Scientific materialism versus Spiritual worldview

Scientific materialism: consciousness is just a byproduct of processes occurring in the brain; systems can be understood by reduction to their components.

Spiritual worldview: consciousness is the basis of form and prior to manifestation

Scientific materialism cannot explain consciousness, life, abstract thinking, organization of cells, etc. It ignores the experiences of hundreds of millions of people (NDE, mystic experiences, telepathy, intuitive insights)
More and more philosophers and scientists are starting to consider *panpsychism* as a view on life.
Academic research is unfortunately heavily influenced by big lobbies (oil, pharma, etc.) and politics, so many scientists are afraid to speak out their true beliefs.
An interesting website that deals with worldviews is: Essentia foundation - analytic idealism course

The wisdom tradition assumes the latter hypothesis of consciousness as the ground of all manifest being and can be classified with panentheism. Let's explore this in the context of the life and death cycle.

If consciousness is at the base of manifestation, what does it mean for the processes of life and death?
This is the subject of discussion in Plato's Phaedo, a famous story where Phaedo tells about the last day of Socrates in prison.
If there is consciousness, or a soul, before birth, then where is this consciousness after death?
Socrates points out that we only observe half of the cycle of life.
In the connection with a body, we lose the remembrance of our spiritual part.
The wisdom tradition tells us that reincarnation is a fact of life

There are strong arguments for that:

- ethical considerations
- experiences (Near Death, memories of a previous life)
- sacred scriptures

The personality never reincarnates. It is the Higher Self that projects a body, like a deciduous tree that sheds its leaves and forms new leaves the next year. There is much more to say on this topic.
For example, why are life circumstances so different and often unjust for so many people?
This kind of questions needs the help of other principles to get to a reasonable explanation.
Especially, the principle of cause and effect, which is the topic of the next chapter.

Also see my latest book "Resonance with the Self" in my My archive (https://archive.org/details/@gnostic_researcher)

The second principleor axiom: cause and effect

Cause and effect principle: every action has consequences.
Even inaction can have consequences.
Example: not helping someone who is drowning.

Nature strives for balance after disturbances.
Every action produces a reaction that is in accord with the action.
This principle works on all levels of being: physical, psychological and spiritual.
As you sow, so you shall reap, according to scripture.

Energy is not lost. That principle also pertains to psychic energy. Have you ever thought deeply about this?
There is a Field in which energy of diverse kind is stored, interacted with, etc., every second of our daily life.
We are ordinarily not aware of this Field, like fishes are not aware of the ocean they swim in.

Action leads to reaction; reaction leads to further actions.
We can say that the reaction feeds back to the action. Feedback loops arise in this manner.
More about that in the section on the third principle. On the bodily level, regulation of, for example, blood sugar levels is controlled via a feedback loop.

In the wisdom tradition, the chain of cause and effect is called karma.
It is important to understand that karma is not fate.
Fate has to do with existing patterns and habits.
People have free will, it is up to them to use that will, change habits and break a pattern of behavior.

For example, one can change one's thought-pattern by directing one's attention to deeper layers in one's consciousness.
A technique for doing that is described in my books: “Mysteries of the human mind” and “Resonance with the Self”. See My archive (https://archive.org/details/@gnostic_researcher)

Life often seems chaotic, because of the conflict of interests between people.
In this regard, there can be seen to be many different types of karma: individual, family related, societal, global, to name a few.

World karma can be seen as the action, reaction and consequences of our financial-economic-political systems which wreck the ecosystem and ourselves.
Infinite growth on a finite planet is impossible, so, a reorganization of above systems will be necessary.

Karma is the universal law (or pattern) of justice and is heavily involved with ethical behavior.
Do not do unto others what you don't want to be done unto you (Golden rule).

Virtues matter, as everyone with a sane mind will understand.

There is much more to say on this topic.
For example, why are life circumstances so different and often unjust for so many people?
This kind of questions can only be explained satisfactorily by studying karma and reincarnation.
Included in that analysis will be the historical background of current situations, events that have led to disastrous consequences for many people today.
For example, in the 1870's in a conference in Berlin, borders were drawn on a map of Africa across ethnic tribes to establish nation states. A recipe for conflicts and disaster.

Can one change one's pattern of life? Yes.
A method is given in my book "Resonance with the Self".
Also, many questions about karma and reincarnation are answered by William Quan Judge, in the first two books of Echoes of the Orient.
See online (free): theosociety.org
(online book section)

The third principle or axiom: holonic organization

A holon is "something that is simultaneously a whole in and of itself, as well as a part of a larger whole" (Wikipedia).

The term was coined by Arthur Koestler.
In Koestler's formulations, a holon is something that has integrity and identity while simultaneously being a part of a larger system; it is a subsystem of a greater system.
Source: wikipedia

Holons can be understood as the constituent part–wholes of a hierarchy (Wikipedia)
A holon participates in a larger organism, system or hierarchy.

Examples of holons:
A cell in the human body (or for that matter, animal or plant) is itself a holon within that body.

In the course of evolution, cells differentiate to form tissues, organs and organ systems, being kinds of holons or subsystems themselves.

A study of subsystems of complex systems, especially in the biological realm has been made by James Grier Miller.
His Living Systems Theory (LST) as of 1978 posits about ten subsystems for matter-energy processing and eleven subsystems for information processing.
Miller's system seems to lack higher order subsystems dealing with ethics, creativity (higher order functions of the mind).

So, more research on psychological subsystems is necessary to extend his theory to include meaning, values, morality, creativity and spirituality.
As for holarchical relationships between the kingdoms of nature, one can point out that:
hairs on the animal and human skin are a remnant of our evolutionary past: they seem to have their

origin in plants. Minerals play an important part in the bone structure of animals and humans.
The animal part within the human being is well known and has been studied by famous psychologists like Freud, Jung, etc.
Passions and hard to control desires are well documented in literature.
Plato's analogy of the chariot with two horses, one white and one black, and a driver that tries to keep the chariot under control is well known.
Plato's Phaedrus dialogue explains that the white horse (the will) has become infatuated with the black horse (passions) and that the charioteer has lost control over the carriage (the human frame)
The charioteer has to bring reason in effect to control the carriage again.

Suppose that one has a discussion with another person.
Beliefs and standpoints differ. The situation gets tense and moods are getting heated.
Each person has a choice: they can let their temper get out of hand or restrain themselves and try to calm down.
Moral nature can restrain base impulses, so it influences the animal part in us, including brain function. The function of impulse control is well known in psychological literature.
So, here we can see control and feedback functions at work in the human being, including the human nervous system.
In my book "Resonance with the Self", appendix B, I describe qualities working in the human psyche. Mastery of the opposites of qualities can be obtained by developing the observing ego function.

Psychologists speak about meta-functions, like meta-emotion: the ability to have feelings about emotions one has. So, this points to the existence of meta-levels, holarchical or nested, within the human being.
These levels reflect as a *control hierarchy* within the human brain.
Stafford Beer has written an informative book on that control hierarchy, called:
"The brain of the firm", and applied the principles he discovered to the management of a firm.

Another example of a holarchy (holons functioning in a hierarchy) can be seen in the monadic model of G. de Purucker.
See my book "Resonance with the Self", appendix A, for more information.

Lastly, human beings are holons in the body of Gaia, Mother Earth, where they (should) fulfill the function of taking care of the planet in its objective aspect (as plants and animals do on a lower level).

Humans are messing up the ecosphere and need to learn an important lesson: whatever one does to the web of life, one does to oneself. This is lesson 101 for humanity!

The fourth principle or axiom: Everything has a unique pattern of vibration

Everything has a unique pattern of vibration (field pattern) and expresses itself in corresponding forms. This will be illustrated with some examples.
We all know the picture of a magnet below a sheet of paper, where iron filings are put upon.
The iron filings are arranged according to the magnetic form field of the magnet.
We do not observe the magnetic field directly, but see the *effects* of the field on the iron particles.

The study of form fields has gotten an impulse by the work of Rupert Sheldrake, a well-known biologist. His work with telepathic dogs is indicative of the existence of such fields.
He also has written a book about science as a religion, a fact well worth pondering about.

Matter has a vibratory aspect, a fact that is well-known in physics, after the work of De Broglie.
In fact, we can say that we live in an energy universe.
The wisdom tradition postulates that our thoughts have an energetic or consciousness aspect as well. In this respect, the faculty of thinking is analyzed in my book "Resonance with the Self". Seven aspects are discussed there and a method is given to align oneself with one's spiritual part.

To get back to the fourth principle: there is an essential, substantive, pattern inherent in all forms of life. This means that every being, consciousness, manifests itself in just that form that is in accordance with the developed qualities of that embodying consciousness, its vibratory pattern or field.

Human consciousness takes a human bodily form, animal consciousness embodies into an animal, etc. The same applies to plants, minerals, and the kingdoms above the human kingdom.
This is called Self-becoming: an expression of the Self, substantive consciousness-life, on the composite planes of being.

There is so much that we don't know yet about life and the universe that we must be modest in regard to denying the possibilities of the existence of other, more advanced beings and civilizations. The more one knows, the more one realizes that there is infinitely more that one doesn't know.

The fourth principle involves questions of heredity as well.

Question:
Is there a formative cause for the gene patterns?
Aristotle would say yes, and so does the wisdom tradition.

The question of a blueprint and form field for genes requires more research by open-minded scientists. It is by no means clear that genes on their own can form a complete, functioning body out of one fertilized germ cell. The level of organization and complexity required to establish the finely tuned gene-protein synthesis loop is even higher than the complexity of that loop itself, as some academics have pointed out.
The origin of life remains a riddle to our scientists.

There is much more that could be said about the principle of essential patterns.
The reader is referred to the esoteric literature as well as to the work of people like Rupert Sheldrake.

The fifth principle or axiom: progressive evolution

Darwinian evolution is concerned with transformation of forms.
But the real meaning of the word "evolution" is to evolve, from the Latin evolvere, to manifest or unroll or unfold qualities of consciousness in matter.
According to the wisdom tradition, consciousness is the primary factor in evolution.
No phenomenon is possible without an active, organizing force working in and through substance/matter.
Biologists have thrown away the baby with the bathwater when they thought they could do without

life force (prana, chi), élan vital (Bergson), entelechy (Aristotle).
Most of them won't admit that the Neo-Darwinian theory (the synthesis) is stuck in a rut and fraught with problems, among which the inability of them to explain the origins of life.

Random mutations do not cut it (this has been calculated for several things: complexity of proteins being one of these).
Alfred Russell Wallace, a contemporary biologist with Darwin, thought that evolution theory didn't explain the higher faculties of the human mind: math, art, music, philosophy (abstract thinking).
He was right in that respect. There is a great mystery connected with the sudden emergence of abstract and symbolic thinking in humanity.

Some details about this emergence can be found in my books and references therein.
It boils down to the influence and help of a kingdom (beings) that is further developed than the human kingdom. A hint can be found in the famous Prometheus myth.
Kingdoms are interdependent as they are part and parcel of a holonic structure.

There have been attempts to explain the emergence of symbolic thought.
Theories of emergentism, however, are not convincing because these try to work "bottom up". What all these theories are missing is the following notion:

to evolve something, there has to be something **in**volved or enfolded first; there is a latent capacity, power, faculty, waiting to be unfolded in an environment and time suitable for expression
(to explain this we need to understand the holarchic process, including emanations, better - see third part of this series and the literature mentioned in the bibliography.

So, evolutionary processes are actually twofold or dual:

(1) consciousness or spirit is getting involved, wraps or clothes itself in matter (less developed realm of being), and:

(2) matter gets an impulse, is informed, by spirit

This is a cyclic process, where the first phase is characterized by a descent or projection of spirit into matter, and the second phase by an ascent of spirit and a refining, etherealization, of matter
We can already observe a bit of the latter process: radioactive elements fall apart, leaving a lighter nucleus behind.
There is much more to say on this topic, like that there is a growing number of academics that is considering panpsychism as a necessary framework for the explanation of evolutionary processes.
Consciousness, qualities (quale problem or "the hard problem"), cannot be explained by current scientific theories, hence the search for new philosophical frameworks.
The wisdom tradition has much to offer in this respect.

Intermezzo: the Sheldrake lecture on "Science set free" CISS institute

Ten (mostly unconscious) assumptions in science which are all questionable,
among which: machine metaphor for nature; matter is unconscious (by definition, 17th century);
nature is purposeless; biological heredity is material (unraveled now);
laws of nature (and their constants) are fixed; memory is stored inside the brain
(memory traces are not found however); mental activity is brain activity;
psychic phenomena are illusionary (however, most people have experience with them)

Progressive evolution

Regarding the term *progressive*, the wisdom tradition tells us that there is a gradual development or unfolding of qualities of consciousness, faculties and powers, in and through the kingdoms of nature.
Plants are more evolved than minerals, animals more than plants, humans more than animals.

These powers and faculties have been described in the wisdom-tradition literature (see notes at the end) and can all be researched by their proper means and methods.

Beings in a certain kingdom develop their consciousness, faculties, powers, by experience in their world and reincarnate in the same kingdom until they have reached the limit of possible experience in this kingdom. Then they can enter the next higher kingdom and can evolve higher aspects of consciousness.

So, evolution has a purpose: to bring forth higher forms of consciousness, greater powers, and development of faculties of mind and spirit.
The kingdoms of nature work together (mutualism) to accomplish this development.
In this regard, G. de Purucker has written a book on *man in evolution*, free online (see notes at the end).

Within the human kingdom, there are many possibilities for development of the mind.
The work of Clare Graves: *spiral dynamics* comes to mind as well as developmental psychology (Piaget, Erikson, Kohlberg and many others).
Humans can evolve their understanding and creativity much further.
In my free e-book "Resonance with the Self", seven aspects of the thinking faculty are described, of which intuition and inspiration are the highest forms.
Will and Imagination can be used (art, communication, dialogue, teaching) to further cooperation and mutual understanding between people (see bibliography for my e-book).

Notes:
Some literature and links to get started: Spiral dynamics
G. de Purucker's Man in evolution

G. de Purucker: Fundamentals of the esoteric philosophy (and all his other works)

Panpsychism (many forms): Panpsychism

Sheldrake lecture on "Science set free" at the CISS institute; Youtube channel:
Archetypal view Science set free

skeptical about skeptics

The sixth principle or axiom: duality as the basis for manifestation

In a nutshell: Mind and Matter are the two poles of manifestation, with Power as the intermediate third factor. This is in accord with the great spiritual and philosophical traditions.
Krishna speaks of the 'pairs of opposites' in the Bhagavad Gita and the need to control these influences (be a master, not a slave). Neo-Platonic teachings point to the same threefold.
Christianity has the Trinity, preceded by Hindu philosophy for ages with the same idea.

In other words: spirit and substance are connected via power/energy/shakti/chi.

In yet other words: there is always a threefold, a trinity, operative in manifestation, whether it be a threefold Logos (Will, Wisdom, The Word), or Force, Substance, Form/Formulation.
The interaction between the poles via the inherent powers causes all progress and regress.
In the evolutionary process, adaptivity is a key aspect of the powers (Indian: shaktis) at work
See the article on the shaktis by Subba Row, in Five Years of Theosophy, especially the part on Kundalini shakti.

Yin/Yang duality seems to be an example of the complementarity of operations in nature.
Many examples here:

Left brain/right brain functions (analysis/synthesis)
Iain McGilchrist latest two books deal with the left and right hemisphere differences and the complementarity of these. Worthwhile reading, because it explains something about the mess the world is in and gives some clues on how to change that condition. He has many lectures and conversations on his Youtube channel (see link above). He gives a lot of examples of how the hemispheres are complementary in function, and why the right hemisphere should be the master and not the servant of the left hemisphere.

Nervous system: sympathic/parasympathic

Muscle system: antagonistic muscles
Sensori-motor coupling
Stop-go system in the brain
Polarization of cell membranes, charge separation (+/-)
Male/female differences

Value systems are implied in all of the following:

On a psychological level:
positive versus negative affect
Pleasure versus pain
Selfish versus unselfish attitude/behavior/mindset/intentions

Question: are emotions created in pairs, like elementary particles?

See my article on 'Qualities or gunas working in the human psyche' in my latest book to get some idea of duality with respect to emotions and their balance, and the directing of consciousness to a higher level (a metafunction).

Examples of polarity/ duality on the spiritual/moral level:
Choosing the path of liberation for oneself versus for the enlightenment of humanity (Pratyeka Buddha versus Amrita Buddha)

The above examples point to the occurrence of bifurcations in natural evolutionary processes.

The phenomenon of the occurrence of bifurcations in complex systems is studied in chaos (or complexity) theory. In fact, most of the examples given here that relate to dual factors have been studied to some degree in academia.

On the political and economical levels there are examples of duality too:
financial-economic: the debt system.
Our current money system is based on debt creation and compound interest. It causes the split between haves and not haves to become ever greater.

Judicial system: the danger of class justice is always present.

Political level: left-right divisions (a bit obsolete now), the split elite versus deplorables becoming very obvious now.
Media: mainstream versus alternative media.

Polarization of elements (ions, minds, states, etc.) occurs in a force field.
Analogies of how these force fields work in different domains may prove useful in future research.

Lastly, the interrelations of the six principles thus far presented surely present a rich field for study and research as well.

Links:

Bhagavad Gita and essays on the Gita by William Quan
Judge: Bhagavad Gita

T. Subba Row's articles in Five years of theosophy

My book "Resonance with the Self", Resonance with the self
and My archive

The seventh principle, or axiom: knowing the essence, or source, of all life

What is the origin of life and being?
Is there one essence and how does it become the manifold?
Is it possible to know the origin of life?

To start with the latter question: yes, according to the wisdom tradition, in the heart or core of each being is Universal Life, the One Source, at work.
The Indian Upanishads state: 'Thou art That'

Every human being can discover the Divine Spark inside by evolving higher aspects of consciousness: intuition and inspiration.
This will result in a gradual realization, a greater understanding of the connectedness of all beings on a deep, fundamental level. This is a process of inner awakening, a gradual enlightenment.
Nowadays we know about quantum entanglement and quantum field theory.
The idea of a field out of which all kinds of particles are manifested is well known.
Analogously, one can understand the One Source out of which countless points of substantive-life-consciousness flow, each with their own characteristic properties.

Another analogy might be an ocean, from which many streams and droplets evolve, only to return to the ocean, or source, after a long journey and many transformations.
The Source is within, immanent, but also transcendent. This is a panentheistic philosophy of life, a process philosophy.
In my latest book, "Resonance with the Self", appendix A, one can find a monadic model pertaining to the stream of consciousness. It was developed by G. de Purucker, a relatively unknown theosopher.
This model shows a common thread running through the monads, implying a unity in diversity, as one may quickly gather from its contents.
If contemplated, the model can help one to realize one's connection with the spirit within.
Each monad in the model has a vehicle to work through, called a soul. Together these form a knot of consciousness, a focus through which universal life flows.
This focus, or center of consciousness, acts as a transformer of the stream of consciousness, stepping down the voltage, so to speak, for the lesser evolved monads (downwards in the diagram, appendix A).
Perhaps an analogy can be drawn here with physics: light (photons) is a carrier of force, the electromagnetic force. Photons interact with matter, typically with electrons.
After a photon is absorbed by matter, it can be re-emitted, with a lower frequency. Its color changes.
Possibly in a similar fashion, consciousness can interact with the brain. This would solve the matter-mind dualism problem.
Matter is crystallized spirit, spirit is etherialized matter, so to speak. Food for thought here, and research.

In fact, the Institute of noetic sciences, IONS, has done a lot of research into mind-matter

interactions. They found clear influences of mind on matter. See link at the end of this presentation (Dean Radin).
So, a human being is a stream of consciousness, a composite being with several foci of consciousness.
The discovering of these foci, or knots of consciousness, by the directing one's attention to the higher centers of one's being, is the process of awakening to a greater reality, the unity running through diversity.

This is an 'in-out' cycle: going inside , diving in the spirit, and then going outside, helping transform the world, bit by bit.
The inside-outside cycle mentioned above was also known to Carl Gustav Jung.
This cycle is involved in the process of individuation, a key theme in Jung's work.
He is also known for his fascination with alchemy, especially alchemical symbols, where the conjunction or marriage of the opposites is a key theme. Compare this with the sixth axiom above, and the integrative function involved in the seventh axiom!

Lastly, some reflections about philosophy of science and religion.
There are two main philosophical traditions as to the scientific method: Empirism and Rationalism
Empirism: knowledge comes to us via the senses (John Locke).
Rationalism: knowledge comes from the mind or ratio (Descartes).

These traditions have been integrated in the modern scientific method.
What is missing in the modern method, and in Western philosophy in general, is the realization of the existence of deeper powers of the human mind: intuition and inspiration.
Sure, some scientists got flashes of insight, now and then, but the realization of the existence of the faculty of intuition: deep, immediate understanding of how things are, is not common in current academic circles.
As long as this remains the case, scientific research is largely confined to phenomena with conclusions that will vary over time.
Especially, the social sciences will scratch only the surface of the subjects and subject matter under scrutiny.
Development of the inner sense of intuition is necessary for the researcher, to get to a truly integrative science that can deal with ethical issues from first principles.

In this regard, transpersonal psychology and therapy can contribute a great deal to the social sciences.
The writings of people like Ken Wilber and Roberto Assagioli (psychosynthesis), for example, contain some real gems.
See the bibliography at the end of this presentation to get some further clues about these first principles.

A short note on themes common in the many religions of this world

Looking at the index of contents of the book "World Scripture", a comparitive anthology of sacred texts,World Scripture, it struck me that almost all of these themes have been dealt with in a coherent and penetrating fashion by G. de Purucker, in his various books.
See the TUP online archive.

In my archive at archive.org, one can find several books dealing with a deeper interpretation of religious themes and stories, providing some integration of insights and connections with themes of science.

Lastly, religion, philosophy and science are not separate domains of life.
Philosophy is associated with *why* questions, religion with *whereto* and science with *how* does it work (know-how)?
These are different aspects of the same reality. (The right hemisphere gets it, the left hemisphere doesn't.)

Some progress towards an integration of these three lenses on reality has been made in the last fifty years or so. The work of Arthur Young can be mentioned here: "The reflexive universe"
See the Arthur Young website.

Arthur Young's work deserves more development of its core ideas. It basically is a proto-model of developmental processes. Its universality as a metaparadigm has not been firmly established, but is promising.
Arthur Young's model, the sevenfold arc of development, includes considerations of matter- energy, formative causation (compare with Rupert Sheldrake), information, organization, meaning, and purpose.

Some online literature concerning the seven principles

https://www.theosociety.org/pasadena/ts/tup-onl.htm

(especially W.Q. Judge and G. de Purucker)
William Quan Judge: comments on the Bhagavad Gita
William Quan Judge: The Ocean of Theosophy

G. de Purucker: Fundamentals of the esoteric philosophy [via an Eastern method of teaching]

G. de Purucker: Fountain-source of occultism (occultism as a study of that which is concealed from the outer senses; a real treasure-trove of knowledge)

Sankaracharya: the Crest-jewel of wisdom

https://www.sno.org/books-and-mp3s (School of the natural order)

Vitvan's writings (various ones, among which: The Christos; Functional activities; Commentaries on the evolution of physics by Einstein and Infeld; Cosmology; Description of the Psychic World)

My archive at archive.org:
https://archive.org/details/@gnostic_researcher

My books in the archive (see link above):

Euser, Martin: Resonance with the Self
Euser, Martin: Mysteries of the human mind

Also: works by Proclus, Boehme & much more

Five years of theosophy

This compilation contains many gems, particularly from Subba Row

Rupert Sheldrake on panpsychism: https://www.youtube.com/watch?v=B7KaNnFij2Q

https://www.youtube.com/watch?v=sm9eMYSYDcA
Rupert Sheldrake on "science set free"

https://www.sheldrake.org/

Institute of Noetic Sciences (IONS): https://noetic.org/

Dean Radin 's lecture on his research on the influence of mind on matter (Youtube)

Also relevant, but not online:

Stafford Beer, Brain of the firm (Applying the hierarchical organization of the human nervous system to management of a firm)

Talbot, Michael: The holographic Universe

Wilber, Ken: integral psychology